

Name: \_\_\_\_\_  
PC: Factoring and Solving Higher Degree Polynomials

Date: \_\_\_\_\_

Find the complete factorization and all zeros of the following polynomials using the information given.

1.  $P(x) = x^4 + 6x^3 + 7x^2 - 12x - 18$ ; zero:  $-3$  (a double zero)

2.  $P(x) = x^4 - x^3 - 5x^2 - x - 6$ ; zeros:  $3, -2$

3.  $P(x) = x^4 - 5x^3 + 3x^2 + 15x - 18$ ; zeros:  $3, 2$

4.  $P(x) = x^4 + 4x^3 - 7x^2 - 36x - 18$ ; zeros:  $\pm 3$

5.  $P(x) = x^4 + 3x^3 + 3x^2 + x$ ; zero:  $-1$

6.  $P(x) = x^4 + 6x^3 + 2x^2 - 18x - 15$ ; zeros:  $-1, -5$

7.  $P(x) = x^4 + 2x^3 - 7x^2 - 18x - 18$ ; zeros:  $\pm 3$

8.  $P(x) = -x^5 + 5x^4 - 3x^3 - 15x^2 + 18x$ ; zeros:  $3, 2$

9.  $P(x) = 3x^4 - 11x^3 - 3x^2 - 6x + 8$ ; zeros:  $4, \frac{2}{3}$

10.  $P(x) = 2x^5 - 5x^4 + x^3 + 4x^2 - 4x$ ; zeros:  $2, -1$